

CLAIMS

- 1 Device for positioning a tool (23) in relation to an
object (2) to be processed, comprising toolholder
means (24) suitable for bearing said tool (23) and
5 movable along a registration direction (F5) in which
said tool (23) is moved towards and away from said
object (2), an adjustable member (25) movable
transversely of said registration direction (F5) so as
to be operationally associatable with said toolholder
10 means (24) and a stop member (31) suitable for
tightening said toolholder means (24; 250) against
said adjustable member (25), said toolholder means
(24) being interposed between said stop member (31)
and said adjustable member (25) along said
15 registration direction (F5).
2. Device according to claim 1, wherein said adjustable
member (25) comprises a block (25) actuated to slide
in a sliding direction (F4) by adjusting means (26)
and provided with a tilted face (29) suitable for
20 interacting with a correspondingly tilted active
surface (30) of said toolholder means (24).
3. Device according to claim 2, wherein said stop member
(31) translates said toolholder means (24) in said
registration direction (F5) which is transverse in
25 relation to said sliding direction (F4).
4. Device according to claim 2, or 3, wherein said stop
member (31) comprises a further tilted face (35)
suitable for interacting with a further
correspondingly tilted active surface (36), opposite
30 said active surface (30), of said toolholder means
(24).
5. Device according to any of claims 2 to 4, wherein said
adjusting means comprises micrometric screw means (26)
rotatingly coupled with said block (25).

6. Device according to any of claims 2 to 5, wherein said block (25) comprises stop plane means (27) sliding on frame means of said apparatus.
7. Device according to any preceding claim, wherein said stop member (31) comprises further stop plane means (33) sliding on frame means of said apparatus.
8. Device according to any preceding claim, and furthermore comprising actuating means (32) arranged to transfer said stop member (31) between a work position (C), wherein said stop member (31) interacts with said toolholder means (24), and a rest position (D), wherein said stop member (31) does not interact with said toolholder means (24).
9. Device according to claim 8, and furthermore comprising further actuating means (38) arranged to move said toolholder means (24), when said stop member (31) is in said rest position (D).
10. Device for positioning a tool (23) in relation to an object to be processed (2), comprising toolholder means (24; 250) suitable for bearing said tool (23) and an adjustable member (25; 163) operationally associatable with said toolholder means (24), characterised in that it furthermore comprises a stop member (31; 173) suitable for tightening said toolholder means (24; 250) against said adjustable member (25; 163).
11. Device according to claim 10, wherein said adjustable member comprises abutting means (165) associatable with a block (164) integral with a frame (252) of said apparatus.
12. Device according to claim 11, wherein the distance between an active zone (174) of said abutting means (165) and said block (164) is adjustable.

13. Device according to claim 12, wherein between said active zone (174) and said block (164) a spacer (169) is removably interposed.
- 5 14. Device according to claim 13, wherein said spacer (169) belongs to a group of spacers, the spacers of said group of spacers having different thicknesses from one another.
- 10 15. Device according to any of claims 11 to 14, wherein said abutting means (165) comprises a head (170) of a screw provided with a shaft screwable in a hole obtained in said block (164).
16. Device according to claim 15 when appended to claim 13, or 14, wherein said spacer is provided with a passage for said stem.
- 15 17. Device according to any of claims 11 to 16, wherein said abutting means (165) is shaped in such a way as to receive resting upon it a portion (157) of said toolholder means (250), when said toolholder means (250) is in an advanced work position (L).
- 20 18. Device according to any of claims 11 to 17, and furthermore comprising a stop element (168) shaped in such a way as to receive resting thereupon a further portion (156) of said toolholder means (250), when said toolholder means is in a retracted rest position
- 25 (M).
19. Device according to claim 18, wherein said stop element (168) is fixed to said block (164).
20. Device according to any of claims 11 to 19, wherein said stop member comprises tooth means (173) movable
- 30 between a locking configuration (W1), wherein tooth means (173) prevents said toolholder means (250) from moving in relation to said frame (252), and a release configuration (W2), wherein said tooth means (173)

allows said toolholder means to move in relation to said frame (252).

21. Device according to claim 20, wherein said tooth means (173) is rotationally supported on said frame (252).

5 22. Device according to claim 20, or 21, when claim 20 is appended to claim 17, or to claim 18, or 19, when they are appended to claim 17, wherein, in said locking configuration (W1) said tooth means (173) interacts with a part (158) of said toolholder means (250) to
10 keep said toolholder means (250) in said advanced work position (L).

23. Device according to claim 22, wherein said part comprises further abutting means (158) projecting from a side face (162) of said toolholder means (250).

15 24. Device according to claim 23, wherein said further abutting means (158) comprises a further head (159) of a further screw provided with a further shank suitable for engaging in hole means (161) obtained in said toolholder means (250).

20 25. Device according to any of claims 11 to 24, wherein said toolholder means comprises plate means (250) sliding along guide means (253) fixed to said frame (252).

25 26. Device according to claim 25, wherein said plate means (250) is provided with opening means (251) inside which said abutting means (165) is positioned.

27. Device according to claim 26, wherein said opening means (251) comprises a first edge zone (155), more distant from said tool (23), and a second edge zone
30 (156), nearer said tool (23).

28. Device according to claim 27, when appended to claim 17, or to any of claims 18 to 26 when appended to claim 17, wherein said portion (157) is obtained in said first edge zone (155).

29. Device according to claim 28, wherein said portion comprises yet further abutting means (157) extending towards the inside of said opening means (251).
30. Device according to claim 29, wherein said yet further abutting means (157) comprises a yet further head (159) of a yet further screw provided with a yet further shank suitable for engaging in a yet further hole (161) obtained in said plate means (250).
31. Device according to any of claims 27 to 30, when claim 27 is appended to claim 18, or to any claim 19 to 26 when appended to claim 18, wherein said further portion is obtained in said second edge zone (156).
32. Device according to any preceding claim, and furthermore comprising monitoring means (39) arranged to monitor said tool (2).
33. Device according to claim 32, wherein said monitoring means (39) comprises camera means (40).
34. Device according to claim 32, or 33, wherein said monitoring means (39) comprises position sensor means (63) arranged to detect the position of said tool.
35. Device according to any preceding claim, and furthermore comprising detecting means (62) arranged to detect characteristics of said object (2).
36. Device according to claim 35, wherein said detecting means (62) comprises temperature sensor means arranged to detect the temperature of said object (2).
37. Device according to claim 35, or 36, wherein said detecting means (62) comprises colour sensor means arranged to detect the colour of said object (2).
38. Device according to any preceding claim wherein said tool comprises incision knife means (23) of an apparatus for the production of caps (2).
39. Apparatus for the production of caps (2), comprising first operating turntable means (3) associated with

first operating means (52) and further operating turntable means (4) associated with further operating means (5), characterised in that between said first operating turntable means (3) and said further operating turntable means (4) are interposed transfer turntable means (6) such as to transfer said caps (2) between said first operating turntable means (3) and said further operating turntable means (4).

40. Apparatus according to claim 39, wherein said first operating means comprises folding means (52; 108) arranged to fold fixing promoting means (54; 106) with which said caps (2) are provided.

41. Apparatus according to claim 39, or 40, wherein said further operating means comprises cutting means (5) arranged to make nominal cutting line means in a parallel wall of said caps (2).

42. Apparatus according to any of claims 39 to 41, and furthermore comprising further transfer turntable means (7) such as to pick up said caps (2) from said further operating turntable means (4).

43. Apparatus for the production of caps (2), comprising first operating turntable means (3) associated with first operating means (52) and further operating turntable means (4) associated with further operating means (5), characterised in that between said first operating means (52) and said second operating means (5) monitoring means (39) is interposed arranged to monitor said caps (2).

44. Apparatus according to claim 43, wherein said first operating means comprises folding means (52; 108) arranged to fold fixing promoting means (54; 106) with which said caps (2) are equipped.

45. Apparatus according to claim 43, or 44, wherein said second operating means comprises cutting means (5)

arranged to make nominal cutting line means in a side wall of said caps (2).

46. Apparatus according to any of claims 43 to 45, wherein said monitoring means (39) comprises camera means (40).

47. Apparatus according to any of claims 43 to 46, and furthermore comprising, downstream of said monitoring means (39), evacuation means suitable for evacuating caps (2) that have been deemed not to conform to a preset quality standard by said monitoring means (39).

48. Apparatus for the production of caps (2), comprising chamber means (60) isolated from an external environment and arranged to receive said caps (2) to enable said caps to be subjected to controlled treatments .

49. Apparatus according to claim 48, wherein with said chamber means (60) adjusting means is associated arranged to adjust the temperature inside said chamber means (60).

50. Apparatus according to claim 48, or 49, wherein with said chamber means (60) irradiation means is associated arranged to irradiate said caps (2).

51. Apparatus according to any of claims 48 to 50, wherein with said chamber means (60) cleaner means is associated arranged to conduct cleaning operations of said caps (2).

52. Apparatus according to any of claims 48 to 51, wherein said chamber means (60) is associated with turntable means (3, 4, 6, 7) arranged to transfer said caps (2).

53. Apparatus according to claim 52, wherein said turntable means comprises transfer turntable means (6) arranged to transfer said caps from first operating turntable means (3) of said apparatus to second operating turntable means (4) of said apparatus.

54. Apparatus according to claim 53, wherein with said first operating turntable means (3) folding means (52; 108) is associated arranged to fold fixing promoting means (54; 106) with which said caps (2) are provided.
- 5 55. Apparatus according to claim 53, or 54, wherein with said second operating turntable means (4) cutting means (5) is associated arranged to make nominal cutting line means in a side wall of said caps (2).
- 10 56. Apparatus according to claim 52, wherein said turntable means comprises transfer turntable means (7) arranged to pick up said caps from operating turntable means (4) of said apparatus and evacuate them from said apparatus.
- 15 57. Apparatus for the production of caps (2), comprising cutting means (5) arranged to make on said caps (2) nominal cutting line means, characterised in that it furthermore comprises sensor means (62) operationally associated with said cutting means (5) in such a way as to monitor the positioning of said cutting means (5) in relation to said caps (2).
- 20 58. Apparatus according to claim 57, wherein said sensor means (62) comprises position sensor means (63) arranged to detect thermal dilations of incision knife means (23) of said cutting means (5).
- 25 59. Apparatus according to claim 57, or 58, wherein said sensor means (62) comprises temperature sensor means arranged to detect the temperature of said caps (2).
- 30 60. Apparatus according to any of claims 57 to 59, wherein said sensor means (62) comprises colour sensor means arranged to detect the colour of said caps (2).
- 61 Apparatus for the production of caps, comprising folding means for folding fixing promoting means (106) inside said caps (2), characterised in that said folding means comprises articulated folding means

(108) provided with an operating zone (151, 152) movable between an inactive position, wherein said operating zone (151, 152) is positioned outside said caps (2), and a work position, wherein said operating zone (151, 152) is received inside said caps (2) to fold said fixing promoting means (106) inside said caps (2).

62. Apparatus according to claim 61, wherein said articulated folding means (108) comprises rocker arm means (149) provided with an end at which said operating zone (151, 152) is obtained.

63. Apparatus according to claim 62, wherein said operating zone comprises roller means (52) rotationally supported on said end.

64. Apparatus according to claim 62, or 63, wherein said rocker arm means (149) comprises a further end (154) cooperating with rod means (138).

65. Apparatus according to any of claims 61 to 64, wherein said articulated folding means (108) is associated with seat means (107) arranged to receive said caps (2).

66. Apparatus according to claim 65, wherein said seat means (107) are arranged substantially angularly spaced at an equal distance from one another on turntable means (103).

67. Apparatus according to claim 65, or 66, and furthermore comprising lifting organs (117) suitable for translating said caps (2) from a bottom supply position to an intermediate position inside said seat means (107).

68. Apparatus according to claim 67, wherein said lifting organs (117) transfer caps (2) from said intermediate position to a top position wherein said folding means (108) takes on said work position.

69. Apparatus according to claim 67, or 68, wherein said articulated folding means (108) is assembled on an element actuated to run along a body (119) of said apparatus by said lifting organs (117).
- 5 70. Apparatus for the production of caps, comprising folding means (52) arranged to fold fixing promoting means with which said caps (2) are provided and cutting means arranged to make nominal cutting line means in a side wall of said caps (2), characterised
10 in that said cutting means is coaxial to said folding means (52) and is arranged outside said folding means (52).
71. Apparatus according to claim 70, wherein outside a spindle body of said cutting means there is provided a
15 collar (148) of said folding means (52).
72. Apparatus according to any of claims 39 to 42 and/or according to any of claims 43 to 47 and/or according to any of claims 48 to 56 and/or according to any of claims 57 to 60 and/or according to any of claim 61 to
20 69 and/or according to claim 70, or 71.
73. Apparatus according to any of claims 39 to 77, and comprising a device according to any one of claims 1 to 38.
74. Apparatus according to any of claims 39 to 73, and
25 furthermore comprising a pressurized air recovery device (44).
75. Apparatus according to claim 74, wherein said pressurized air recovery device (44) is connected to suction means associated with cutting means (5) of the
30 apparatus and arranged to pick up flashing arising from the interaction between said cutting means (5) and said caps (2).
76. Apparatus according to claim 74, or 75, wherein said pressurized air recovery device (44) is connected to

further suction means associated with further cutting means (37) arranged to remove appendages of respective casting feedheads from said caps (2).

- 5 77. Apparatus according to claim 75, or according to claim 76 when appended to claim 75, wherein said pressurized air recovery device (44) comprises conduit means (50) cooperating with filter means (51) arranged to withhold said flashing.
- 10 78. Apparatus according to claim 76, or according to claim 77 when appended to claim 76, wherein said pressurized air recovery device (44) comprises further conduit means (45) cooperating with further filter means (46) arranged to withhold said appendages.
- 15 79. Apparatus according to claim 78 when appended to claim 77, wherein said conduit means (50) and said further conduit means (45) flow into manifold means (47).
80. Apparatus according to claim 79, wherein with said manifold means (47) fan means is associated (48).
- 20 81. Apparatus according to claim 80, wherein said manifold means (47) supplies pneumatic conveying means (8) arranged to transfer said caps (2) to operating turntable means (3, 4) of said apparatus.
- 25 82. Apparatus according to any of claims 39 to 81, and furthermore comprising heating means (5) arranged to heat operating means of said apparatus.
- 30 83. Apparatus according to claim 82, and furthermore comprising rotating electric commutator means (56) arranged to connect said operating means to current feeder means associated with frame means of said apparatus.
84. Apparatus according to claim 83, wherein said operating means is movable in relation to said frame means.

85. Apparatus according to any of claims 82 to 84, wherein said operating means comprises folding means (52) arranged to fold fixing promoting means (54) with which said caps (2) are provided.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☒ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.